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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HAROLD, JEFFEREY F

ART UNIT

PAPER NUMBER

2646

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/533,022

Applicant(s)

LEBLANC ET AL.

Examiner

Jefferey F. Harold

Art Unit

2646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,6-9,11-32 and 35-136 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 and 36 is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) See Continuation Sheet is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims rejected are 1,4,6,8,9,11-13,15,19-21,26-28,31,32,35,37,39-44,46,47,52-55,59-77,79-87,89,93-96,99,101-105,107-125 and 130-133.

Continuation of Disposition of Claims: Claims objected to are 14,16-18,22-25,28-31,38,42,45-51,55-58,78,88,90-92,97,98,100,106,126-129 and 134-136.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. ***Claims 1, 4, 6, 8, 9, 11-13, 15, 19-21, 26-28, 31, 32, 35, 37, 39-44, 46, 47, 52-55, 59-77, 79-87, 89, 93-96, 99, 101-105, 107-125, and 130-133*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ressor, in view of Romesburg (United States Patent (6,185,300)).

Regarding **claim 1**, Ressor discloses a nonlinear processor for acoustic echo canceller with background noise preservation and long echo tail suppression. In addition, Ressor discloses a method of conditioning a composite signal, the composite signal being formed by introducing at least a portion of a first signal into a second signal, comprising: estimating a characteristic of at least one of the first and composite signals; and selectively conditioning the composite signal, the selection of whether to condition the composite signal being based on the estimated characteristic, as disclosed at column 4, line 16 through column 5, line 15 and exhibited in figure 2, however, Ressor fails to disclose controlling convergence of an adaptive filter responsive to the estimated signal characteristic. However, the examiner maintains that it was well known in the art to provide controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as taught by Romesburg.

In a similar field of endeavor Romesburg discloses an echo canceller for use in communication systems. In addition, Romesburg discloses controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as disclosed at column 12, line 34 through column 22, line 35 and exhibited in figures 4 and 5.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ressor by specifically providing controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as taught by Romesburg, for the purpose of optimizing system speed and adaptability without sacrificing stability.

Regarding **claim 4**, Ressor and Romesburg disclose everything claimed as applied above (see claim 1), in addition, Ressor discloses wherein the conditioning of the composite signal comprises adaptively filtering the first signal, and recovering the second signal by subtracting the filtered first signal from the composite signal, as disclosed at column 4, line 55 through column 6, line 13 and exhibited in figures 1-3.

Regarding **claim 6**, Ressor and Romesburg disclose everything claimed as applied above (see claim 4), in addition, Ressor discloses wherein the characteristic estimation comprises estimating a return loss between the composite signal and the first signal, estimating a return loss enhancement, the return loss enhancement comprising a reduction in power of the composite signal due to the signal conditioning in the absence of the second signal, and wherein the conditioning of the composite signal further comprises adjusting the filter adaptation as a function of at least one of the

estimated return loss and the estimated return loss enhancement, as disclosed at column 4, line 55 through column 6, line 13 and exhibited in figures 1-3.

Regarding **claim 8**, Ressor and Romesburg disclose everything claimed as applied above (see claim 4), in addition, Ressor discloses further comprising processing the recovered second signal when information is detected in the first signal but not in the second signal, as disclosed at column 4, line 55 through column 6, line 13 and exhibited in figures 1-3.

Regarding **claim 9**, Ressor discloses a method of canceling a far end echo from a near end signal, comprising: estimating a characteristic of at least one of a far end signal and the near end signal; and selectively canceling the echo from the near end signal, the selection of whether to cancel the echo from the near end signal being based on the estimated characteristic, as disclosed at column 4, line 55 through column 6, line 13 and exhibited in figures 1-3, however, Ressor fails to disclose controlling convergence of an adaptive filter responsive to the estimated signal characteristic. However, the examiner maintains that it was well known in the art to provide controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as taught by Romesburg.

In a similar field of endeavor Romesburg discloses an echo canceller for use in communication systems. In addition, Romesburg discloses controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as disclosed at column 12, line 34 through column 22, line 35 and exhibited in figures 4 and 5.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ressor by specifically providing controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as taught by Romesburg, for the purpose of optimizing system speed and adaptability without sacrificing stability.

Regarding **claim 11**, Ressor and Romesburg disclose everything claimed as applied above (see claim 9), in addition, Ressor discloses wherein the characteristic estimation comprises estimating a power level of the far end signal, and estimating an echo return loss between the far end signal and the near end signal, and wherein the echo is cancelled from the near end signal if the estimated power level of the far end signal minus the echo return loss is greater than a threshold, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 12**, Ressor and Romesburg disclose everything claimed as applied above (see claim 9), in addition, Ressor discloses wherein the characteristic estimation comprises estimating a power level of the far end signal, estimating an echo return loss between the far end signal and the near end signal, and estimating a power level of the near end signal, wherein the selection of whether to cancel the echo from the near end signal is based on the estimated power levels and the estimated echo return loss, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 13**, Ressor and Romesburg disclose everything claimed as applied above (see claim 9), in addition, Ressor discloses wherein the echo cancellation

comprises adaptively filtering the far end signal and subtracting the filtered far end signal from the near end signal, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 15**, Ressor and Romesburg disclose everything claimed as applied above (see claim 13), in addition, Ressor discloses wherein the characteristic estimation comprises estimating an echo return loss between the far end signal and the near end signal, and estimating an echo return loss enhancement between the near end signal and the near end signal without the echo, and wherein the echo is canceled by selectively adjusting the filter adaptation as a function of the echo return loss and echo return loss enhancement, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 19**, Ressor and Romesburg disclose everything claimed as applied above (see claim 13), in addition, Ressor discloses detecting information in the near end signal, wherein the filter adaptation comprises limiting the filter adaptation when the information is detected and the filter adaptation is converged, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 21**, Ressor and Romesburg disclose everything claimed as applied above (see claim 13), in addition, Ressor discloses wherein the filter adaptation is limited when the filter adaptation has been active for a period longer than one second after filter adaptation initialization, as column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 26**, Ressor and Romesburg disclose everything claimed as applied above (see claim 9), in addition, Ressor discloses detecting information in the far end signal, detecting information in the near end signal, and non linear processing the near end signal when information is detected in the far end signal and not in the near end signal, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 27**, Ressor and Romesburg disclose everything claimed as applied above (see claim 9), in addition, Ressor discloses wherein the characteristic estimation comprises estimating a power level of the far end signal, estimating a power level of the near end signal, estimating a power level of a near end signal without the echo, estimating a power level of noise on the far end signal, and selectively non linear processing the near end signal, the selection as to whether to non linear process the near end signal being based on the estimated power levels, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 32**, Ressor discloses a signal conditioner for conditioning a composite signal, the composite signal being formed by introducing at least a portion of a first signal into a second signal, comprising: a canceller to recover the second signal from the composite signal; and a bypass to selectively enable the canceller, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3, however, Ressor fails to disclose controlling convergence of an adaptive filter responsive to the estimated signal characteristic. However, the examiner maintains that

it was well known in the art to provide controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as taught by Romesburg.

In a similar field of endeavor Romesburg discloses an echo canceller for use in communication systems. In addition, Romesburg discloses controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as disclosed at column 12, line 34 through column 22, line 35 and exhibited in figures 4 and 5.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ressor by specifically providing controlling convergence of an adaptive filter responsive to the estimated signal characteristic, as taught by Romesburg, for the purpose of optimizing system speed and adaptability without sacrificing stability.

Regarding **claim 35**, Ressor and Romesburg disclose everything claimed as applied above (see claim 32), in addition, Ressor discloses wherein a power estimator to estimate a maximum power level and an average power level of the first signal, and adaptation logic to estimate a return loss between the first signal and the composite signal, wherein the bypass enables the canceller as a function of at least one of the estimated maximum power level, the estimated average power level, the estimated return loss, as disclosed at column 4, line 55 through column 6, line 13 and exhibited in figures 1-3.

Regarding **claim 37**, Ressor and Romesburg disclose everything claimed as applied above (see claim 35), in addition, Ressor discloses a second power estimator to estimate an average power level of the composite signal, wherein the adaptation logic

estimates the return loss by dividing the estimated average power level of the first signal by the estimated average power level of the composite signal, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 39**, Ressor and Romesburg disclose everything claimed as applied above (see claim 32), in addition, Ressor discloses wherein the canceller further comprises an adaptive filter to filter the first signal, and a combined operator to subtract the filtered first signal from the composite signal to recover the second signal, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 40**, Ressor and Romesburg disclose everything claimed as applied above (see claim 39), in addition, Ressor discloses a non linear processor, and adaptation logic which invokes the non linear processor to suppress the recovered second signal when information is detected in the first signal but not in the composite signal, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 41**, Ressor and Romesburg disclose everything claimed as applied above (see claim 40), in addition, Ressor discloses wherein the information includes voice, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 43**, Ressor and Romesburg disclose everything claimed as applied above (see claim 32), in addition, Ressor discloses a filter adapter to adjust the adaptation of the adaptive filter, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 44**, Ressor and Romesburg disclose everything claimed as applied above (see claim 32), in addition, Ressor discloses adaptation logic to estimate a return loss between the first signal and the composite signal, and a return loss enhancement between the composite signal and the recovered second signal, the filter adapter adjusting the adaptation of the adaptive filter as a function of the estimated return loss and the estimated return loss enhancement, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 52**, Ressor and Romesburg disclose everything claimed as applied above (see claim 44), in addition, Ressor discloses wherein the adaptation logic disables the filter adapter when the adaptation logic detects information in the composite signal and the adaptive filter is converged, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claim 53**, Ressor and Romesburg disclose everything claimed as applied above (see claim 44), in addition, Ressor discloses wherein the information includes voice, as disclosed at column 4, line 16 through column 5, line15 and exhibited in figure 2.

Regarding **claim 54**, Ressor and Romesburg disclose everything claimed as applied above (see claim 44), in addition, Ressor wherein the adaptation logic limits the adaptation of the adaptive filter is converged when the adaptation of the adaptive filter has been active for a period longer than one second after an off hook transition of a telephony device coupled between the first signal and the composite signal, as disclosed at column 4, line 55 through column 6, line13 and exhibited in figures 1-3.

Regarding **claims 59-77, 79-87, 89, 93-96, 99, 101-105, 107-125, and 130-133** they are interpreted and thus rejected for the reasons set forth above in the rejections.

Allowable Subject Matter

3. ***Claims 7 and 36*** are allowed.
4. ***Claims 14, 16-18, 22-25, 28-31, 38, 42, 45-51, 55-58, 78, 88, 90-92, 97, 98, 100, 106, 126-129 and 134-136*** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments with respect to the claim have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F. Harold whose telephone number is 571-272-7519. The examiner can normally be reached on Monday - Friday 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JFH
January 18, 2006



Jefferey F Harold
Primary Examiner
Art Unit 2646